## Notes on Neotropical Parathesis (Myrsinaceae)

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ABSTRACT. Parathesis costaricensis, P. glendae, and P. longipedicellata are described and illustrated, and their phylogenetic relationships are discussed. A key is provided to separate the new species. In addition, a new combination is made for Parathesis sinuata (from Colombia), and P. amazonica Mez is lectotypified.

The genus *Parathesis* J. D. Hooker contains 100 species distributed from northern Mexico to Panama, the Caribbean, and throughout the Andes from Venezuela to Bolivia. The genus is defined by the unique glandular papillae of the calyx and corolla lobes, and bright yellow anthers. In preparation for our treatment of the genus *Parathesis* for *Flora Mesoamericana*, three new species from Costa Rica were discovered and are described herewith. A new combination from Colombia is also made, and *Parathesis amazonica* is lectotypified.

Parathesis costaricensis Ricketson, sp. nov. TYPE: Costa Rica. Limón Cantón: Cordillera de Talamanca, along Río Madre de Dios, near edge of river, 10°03′N, 83°26′W, 240–300 m, 2 Sep. 1988 (fl), Michael Grayum, Gerardo Herrera & Rafael Robles 8681 (holotype, MO; isotypes, BRIT, CR not seen, US). Figure 1.

Quoad inflorescentiam terminalem, antheras versatiles necnon folia magne grosseque pubescentes trichomatibus erectis dendroideisque, *P. longipedicellato* valde arcte affinis, sed ab ea rhachidibus inflorescentiarum cacaino-(non fuliginoso-)dendroideo-tomentosis, pedicellis 4.0–5.5 (non 6.0–9.0) mm longis, lobis calycis deltatis (non ovatis) 0.8–1.2 (nec 1.2–1.4) mm longis, filamentis staminibus 2.2–2.5 (non 2.5–3.0) mm longis, denique antheris sine apiculis (non apiculatis) praeclare distinguitur.

Tree 5 m tall. Branchlets thick, terete, 0.4–0.9 cm diam., densely appressed dark reddish chocolate-brown dendroid-tomentose, the hairs erect. Leaf blades chartaceous, elliptic or oblong-elliptic, 20–32 cm long, 7–14 cm wide, apically acute to acuminate, basally broadly acute, decurrent on the

petiole, the midrib impressed above, prominently raised below, the secondary veins conspicuous, 30-50 pairs, impressed above, prominently raised below, prominently red punctate above, conspicuously red punctate-lineate below, the entire upper surface with scattered dendroid hairs, densely tomentose along midrib, usually glabrate with age, the lower surface inconspicuously bizonal, tomentum of erect dendroid hairs, densely so along the midrib and secondary veins, the margins flat, subentire to obscurely or minutely crenulate. Petioles marginate, stout, 4.5-6 cm long, dark reddish chocolate-brown dendroid-tomentose throughout. Inflorescences terminal and in the axils of the uppermost leaves, pyramidal-paniculate, bipinnately compound; peduncles 2-3.5 cm long, the rachis somewhat flexuous, the rachis and branchlets densely tomentose with dark reddish chocolate-brown dendroid hairs intermixed with papillae; pedicels angulate, 4-5.5 mm long, appressed dark reddish chocolate-brown papillose. Flowers occurring in clusters of 4-15, 5(-6)-merous, coriaceous, 6-7 mm long, densely and prominently black punctate, obscured by a dense dark reddish chocolate-brown papillose-tomentum; sepals deltoid, 1.5-2 mm long, 1-1.5 mm wide, the tube 0.7-0.8 mm long, the lobes 0.8-1.2 mm long, 0.8-1.2 mm wide, the apex acute, densely and prominently black punctate, obscured outside, prominent inside, appressed dark reddish chocolate-brown papillose-tomentose outside, glabrous within, the margins papillose; petals linear-lanceolate, 5.5-6.5 mm long, 1-1.2 mm wide at base, the tube 0.4–0.5 mm long, the lobes 5–6 mm long, 0.8– 1.5 mm wide, the apex acute, black punctate and punctate-lineate, conspicuous outside, prominent within, outer surface papillose, sparsely villous within, more densely so along the margins and apically, glabrous only at the very base; stamens 2.5-3 mm long; the filaments flat, 2-2.5 mm, black punctate-lineate, glabrous; the anthers versatile, linear-lanceolate, 1.4-1.8 mm long, the apex 0.1-

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Figure 1. Parathesis costaricensis Ricketson. —A. Habit, flowering branch. —B. Detail of inflorescence. —C. Detail of abaxial leaf surface. —D. Stamen, showing protandrous anther before becoming versatile. A–D drawn from holotype.

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0.3 mm wide, the base 0.6–0.8 mm wide, apically obtuse to acutish, basally cordate to somewhat sagittate, the connective dorsally black-punctate its entire length, dehiscent by longitudinal slits, open before anthesis; ovary globose, densely dark reddish chocolate-brown hirsute tomentose throughout, the style 4–5 mm, densely tomentose basally, glabrous above, the placenta obnapiform, with 9–11 uniseriate ovules. Fruits unknown.

Distribution. Parathesis costaricensis is endemic to Costa Rica, known only from the type collection.

*Ecology*. This species grows in lowland tropical moist forest and has protandrous flowers that are probably self-compatible.

Parathesis costaricensis is similar to P. longipe-dicellata in general appearance and tomentum of the branchlets and undersurface of the leaf blades, but differs by its much shorter pedicels. Parathesis costaricensis differs from P. amplifolia from Panama and P. cartagoana from Costa Rica in the tomentum of the undersurface of the leaf blades mostly erect and inconspicuously bizonal versus mostly appressed and conspicuously bizonal. Parathesis costaricensis also differs from P. glendae from Costa Rica and P. croatii from Panama in the tomentum of the branchlets of erect dark reddish chocolate-brown versus appressed and light tannish brown or dark brown.

Parathesis glendae Ricketson, sp. nov. TYPE: Costa Rica. Limón Cantón: Parque Internacional La Amistad, Quebrada Crori, Croriña, 9°25′15″N, 82°59′00″W, 600 m, 20 July 1989 (fl), Abelardo Chacón 240 (holotype, MO; isotypes, BRIT, CR not seen, F). Figure 2.

Propter inflorescentiam terminalem, antheras versatiles, folia magne grosseque pubescentia, trichomatibus erectis bizonaliterque rufo-dendroideo-tomentosis, *P. croatio* valde arcte affinis, sed ab ea inter petala atque apicem tubis corollinae papillis brunneis indutis (non glabris), petiolis 6–7.5 (non 3.5–4.5) cm longis, floribus 6.5–7.0 (non 8.0–9.0) mm longis, lobis calycis 0.8–1.0 (non 1.5–2) mm longis, denique lobis corollinae 6.0–6.2 (non 7.5–8.5) mm longis statim distinguitur.

Tree 15 m tall, 25 cm DBH. Branchlets thick, terete, 0.6–1 cm diam., densely appressed short light brown dendroid-tomentose. Leaf blades chartaceous, elliptic or oblong-elliptic, 20–46 cm long, 9–16 cm wide, apically acute to acuminate, basally acute, decurrent on the petiole, the midrib impressed above, prominently raised below, the secondary veins conspicuous, 45–65 pairs, slightly impressed above, prominently raised below, prominently red punctate and punctate-lineate

above, conspicuously red punctate and punctatelineate below, the upper surface mostly glabrous, occasionally with a few scattered light brown dendroid-tomentose hairs when young, generally with appressed short, light brown dendroid hairs along the midrib, the lower surface conspicuously bizonal when young, less prominently so with age, light brown appressed dendroid- or stellate-tomentose, occasionally with a few, scattered, erect trichomes, generally conspicuous along the midrib and secondary veins, denser around the midrib, thinning to generally glabrous toward the margins; the margins flat, conspicuously minutely crenulate. Petioles canaliculate, stout, 6-7.5 cm long, densely appressed short light brown dendroid-tomentose outside when young, glabrescent with age, glabrous within. Inflorescences terminal and in the axils of the uppermost leaves, pyramidal-paniculate, bipinnately compound, straight and mostly erect, the flowers generally congested at the nodes; pedicels angulate, 3-6 mm long, almost completely blackpunctate, densely to scattered light brown papillose-tomentose. Flowers occurring in clusters of 5-12, 5-merous, coriaceous, 6.5-7 mm long, densely light brown papillose-tomentose; sepals deltoid, 1-1.2 mm long, 0.8-1 mm wide, the tube 0.2-0.4 mm long, the lobes 0.8-1 mm long, 0.8-1 mm wide, the apex acute, black-punctate and punctate-lineate, mostly obscured outside, prominent within, densely light brown papillose-tomentose outside, glabrous within, the margins papillose; petals narrowly lineate-lanceolate, 6-6.5 mm long, 1-1.2 mm wide at base, the tube 0.3-0.5 mm long, the lobes 6-6.2 mm long, the apex acute, black-punctate and punctate-lineate, conspicuous outside, prominent within, outer surface densely to scattered light brown papillose, scattered villous tomentose over entire inner surface, except glabrous at very base and long villous tomentose along the margins and apex, a large rounded mound of tufted short light brown papillae between each of the lobes of the petals and each of the filaments, on the rim of the corolla tube; stamens 3-3.5 mm long, the filaments flat, 2.5-2.8 mm, black-punctate-lineate, glabrous, the anthers versatile, linear-lanceolate, apically obtuse to acutish, basally cordate to somewhat sagittate, 1.2-1.5 mm long, the apex 0.3-0.5 mm wide, the base 0.5-0.8 mm wide, the connective dorsally narrowly black-punctate only around the middle, dehiscent by longitudinal slits, open before anthesis; ovary globose-lobed, generally 5-lobed, densely short light brown villous-tomentose throughout, the style 4.5-4.8 mm long, usually dark red-black, completely glabrous, the placenta obnapiform, with 10-12 biseriate ovules. Fruit unknown.

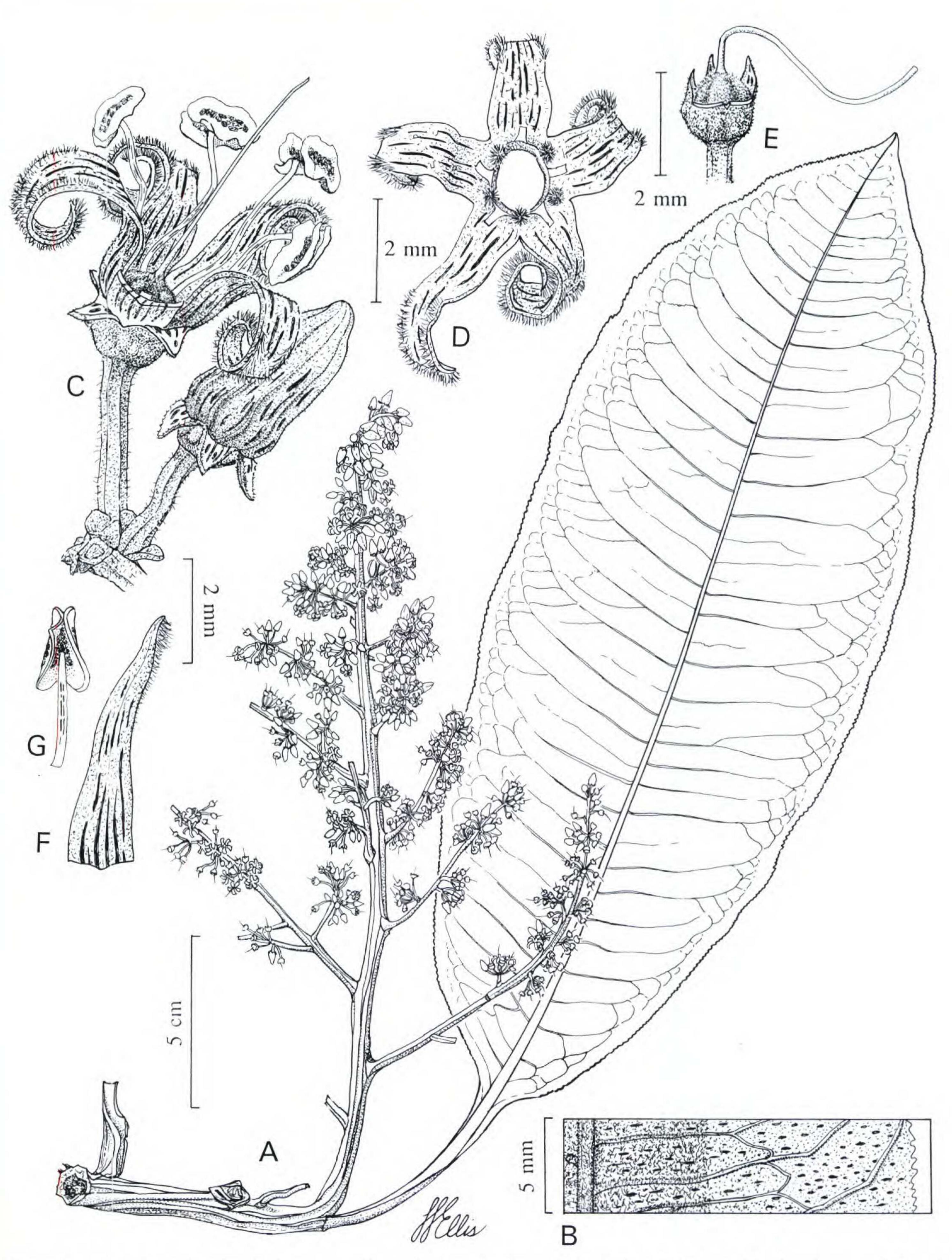


Figure 2. Parathesis glendae Ricketson. —A. Habit, flowering branch. —B. Detail of abaxial leaf surface. —C. Detail of inflorescence, with petal and stamen removed (F & G). —D. Detail of removed corolla tube (apical filaments and anthers removed). —E. Detail of immature fruit, with some sepal lobes removed. —F. Detail of abaxial petal surface. —G. Detail of stamen. A, B drawn from BRIT isotype. C—F drawn from holotype.

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Distribution. Parathesis glendae is endemic to Costa Rica, known only from the type collection.

Ecology. This species has protandrous flowers that are probably self-compatible.

Etymology. It gives me great pleasure to dedicate this spectacular new species to my bride, Glenda (neé Hahn) Ricketson, for her steady encouragement and support for my work.

Parathesis glendae is unique in the group of plants with terminal inflorescences, versatile anthers, and large leaves because of the tufted mounds of short, light brown papillae between the lobes of the petals and filaments on the rim of the corolla tube. It is similar to Parathesis croatii from Panama in the appressed tomentum of the branchlets, but differs primarily in the tufted mounds of papillae on the corolla tube. Parathesis glendae is also distinguished from both P. amplifolia from Panama and P. cartagoana from Costa Rica in the tomentum of the underside of the leaf blades. From both Parathesis costaricensis and P. longipedicellata from Costa Rica, P. glendae may be separated by the appressed, short, light brown dendroid tomentum on the branchlets.

Parathesis longipedicellata Ricketson, sp. nov. TYPE: Costa Rica. Puntarenas Cantón: Parque Nacional Corcovado Gira de Corcovado, Acro de Piedra to Río Corcovado, 8°28'N, 83°35'W, 1–30 m, 17 June 1989 (fl), C. Kernan 1155 (holotype, MO; isotypes, BRIT, CR not seen, F, MO, NY, TEX, US, US). Figure 3.

Quoad inflorescentiam terminalem, antheras versatiles necnon folia magne grosseque pubescentia trichomatibus erectis dendroideisque, *P. costaricensi* valde arcte affinis, sed ab ea rhachidibus inflorescentiarum fuliginoso-(non cacaino-)dendroideo-tomentosis, pedicellis 6.0–9.0 (non 4.5–5.0) mm longis, lobis calycis ovatis (non deltatis) 1.2–1.4 (nec 0.8–1.2) mm longis, filamentis staminibus 2.5–3.0 (non 2.2–2.5) mm longis, denique antheris apiculatis (nec sine apiculis) praeclare distinguitur.

Tree 8–22 m tall, 10–26.3 cm DBH, latex red. Branchlets thick, terete, 0.5–1 cm diam., densely matted ferruginous dendroid-tomentose, the hairs erect. Leaf blades chartaceous, elliptic or oblong-elliptic, 17–36 cm long, 9–15 cm wide, apically acute to acuminate, basally acute to slightly oblique, decurrent on the petiole, the midrib impressed above, prominently raised below, the secondary veins conspicuous, 30–50 pairs, slightly impressed above, prominently raised below, conspicuously black punctate, infrequently punctate-lineate above, inconspicuously black punctate below, the entire upper surface tomentose with scattered ferruginous erect dendroid hairs, at least

when young, generally glabrescent with age, densely matted erect ferruginous dendroid tomentum along the upper midrib, ± persistent, the lower surface densely tomentose with persistent erect ferruginous dendroid hairs on the midrib and secondary veins, with only scattered persistent erect hairs near the midrib, denser toward the margins, thus conspicuously bizonal below when young, inconspicuously bizonal with age; the margins flat, subentire to obscurely or minutely crenulate. Petioles marginate, stout, 3.5-8.5 cm long, densely matted erect ferruginous dendroid-tomentose throughout. Inflorescences terminal and in the axils of the uppermost leaves, pyramidal-paniculate, nearly twice as wide as long, bipinnately compound, the rachis somewhat flexuous, the flowers generally loosely open at the nodes; the principal branchlets subtended by reduced leafy bracts, the blades chartaceous, elliptic to oblong-elliptic, 9-17 cm long, 2.5-5.5 cm wide, otherwise as in the vegetative leaves; petioles 2-3.5 cm long, densely matted erect ferruginous dendroid-tomentose; pedicels terete to slightly angulate, 6-9 mm long, densely erect ferruginous dendroid-tomentose intermixed with light brown or ferruginous papillae. Flowers occurring in clusters of 4-10, 5-merous, coriaceous, 6.5-7.5 mm long, black punctate-lineate, erect ferruginous dendroid-tomentose intermixed with ferruginous papillae; sepals ovate, 1.4-1.8 mm long, 0.8-1 mm wide, the tube 0.2-0.6 mm long, the lobes 1.2-1.4 mm long, 1.4-1.6 mm wide, sinuses wide, the apex acute, black punctate, inconspicuous without, conspicuous within, erect ferruginous dendroid-tomentose intermixed with ferruginous papillae without, glabrous within, the margins ferruginous dendroid-tomentose and papillose; petals narrowly lanceolate, 6–7 mm long, 1.6– 1.8 mm wide, the tube 1-2 mm long, the lobes 5-6 mm long, 1.6–1.8 mm wide, the apex acuminate, black punctate and punctate-lineate inconspicuously without, conspicuously so within, outer surface erect ferruginous dendroid-tomentose intermixed with ferruginous papillae, inner surface scattered erect ferruginous villous-tomentose intermixed with ferruginous papillae along the margins and apex to near the middle, usually densely matted at the apex, glabrous from near the middle to the base; stamens 2.5–3.5 mm long, the filaments flat, 2.5-3 mm long, black punctate-lineate, glabrous, the anthers tardily versatile, linear-lanceolate, 1.5-1.8 mm long, the apex 0.2-0.3 mm wide, the base 0.4-0.6 mm wide, apically obtuse to acutish, apiculate, basally cordate to sagittate, the connective dorsally black punctate through most of its length, dehiscent by longitudinal slits, open before

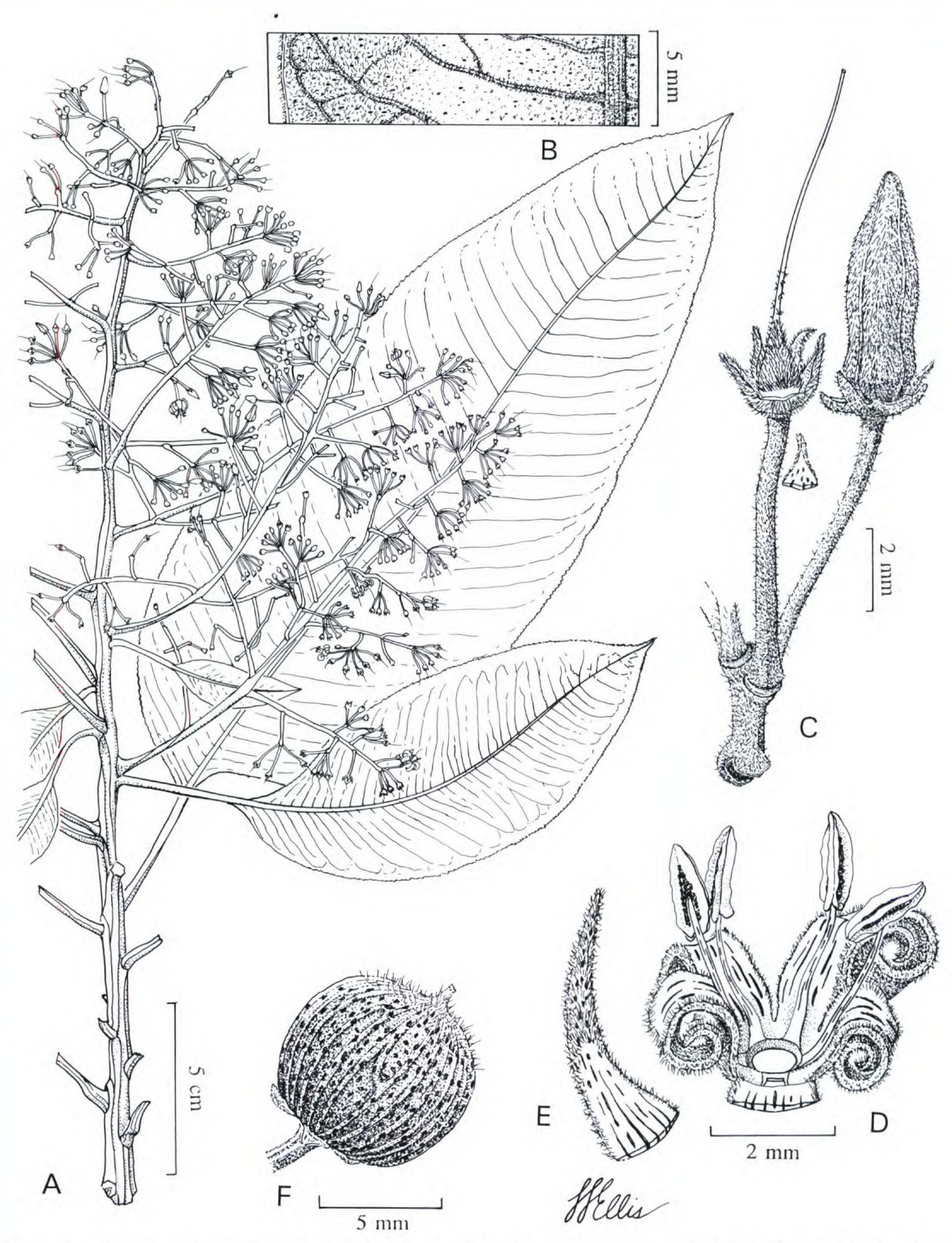


Figure 3. Parathesis longipedicellata Ricketson. —A. Habit, flowering branch. —B. Detail of abaxial leaf surface. —C. Detail of inflorescence, with sepal removed. —D. Detail of corolla tube with petal removed (E). —E. Detail of abaxial petal surface. —F. Mature fruit. A, B drawn from MO isotype. C–E drawn from holotype. D drawn from Marin 500 (MO).

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anthesis; ovary globose, upper ½ densely erect ferruginous hirsute tomentose, with a distinct glabrous band around the base, the style 4.5–5 mm long, dark reddish to black, lower half with scattered ferruginous dendroid tomentum, the upper half glabrous, the placenta obnapiform, with 12 uniseriate ovules. Fruit globose, longitudinally costate, 6–9.5 mm diam., minutely pubescent over upper half to ½ of the fruit, costa evident.

Distribution. Parathesis longipedicellata is endemic to the Osa Peninsula in Puntarenas Cantón of Costa Rica. Sea level to 350 m elevation.

*Ecology.* This species is occasional in tall wet forests and has protandrous flowers that are probably self-compatible.

Parathesis longipedicellata differs from all other species of the group with terminal inflorescences, versatile anthers, and large leaves primarily because of the unusually long pedicels. It is similar to Parathesis costaricensis in the tomentum of the branchlets and undersurface of the leaves, and differs in the tomentum color, shape of the inflorescence, and length of the pedicels, sepals, and filaments. Parathesis longipedicellata differs from P. amplifolia from Panama and P. cartagoana from Costa Rica in the tomentum on the undersurface of the leaf blades. It may also be distinguished from both Parathesis glendae from Costa Rica and P. croatii from Panama by the tomentum on the branchlets.

Paratypes. COSTA RICA. Puntarenas Cantón: Reserva Forestal Golfo Dulce Osa Península, Trocha de La Tarde road 10 km SW of La Palma, S of Rincón de Osa, E of the Río Rincón valley, 8°37′N, 83°28′W, 150–200 m, 28 Apr. 1988 (fl), B. Hammel & R. Robles 16768 (CR not seen, MO, US); Región GOLFITO Sección "Bosque de los Austriacos," primary forest, Research Plot, La Gamba, 8°41'N, 83°13'W, 300 m, 09 Dec. 1993 (fl), W. Huber & A. Weissenhofer 26 (MO, W not seen); Osa, Rancho Quemado, Sector Oeste, Sierpe, 8°41'00"N, 83°35'40"W, 350 m, 25 Aug. 1992 (fr), J. Marín & G. Marín 500 (BRIT, CR not seen, INB not seen, MO); Osa Peninsula, Aguabuena, 3.5 km W of Rincón, one-hectare permanent sample plot, 800 m N of the house of Henry Monge in welldrained, moderately sloping terrain, tall forest along timber road, left after selective logging Mar. 1992, Plot # 3144, 8°42′N, 83°30′W, 130 m, 17 Apr. 1993 (fl), K. Thomsen 876 (BRIT, C not seen, K not seen, USJ not seen); Osa, P.N. Corcovado, Península de Osa, Estación San Pedrillo, sendero que va al límite, 8°37'00"N, 83°44'00"W, 100 m, 21 Sep. 1993 (fr), Reinaldo Aguilar 2364 (CR not seen, INB not seen, MO, NY not seen); Golfito, P.N. Corcovado, Península de Osa, Estación Los Patos, Cerro Degra, 8°34′00″N, 83°31′00″W, 200 m, 5 June 1994 (fl, fr), Reinaldo Aguilar 3335 (BRIT, CR not seen, INB not seen, MO); Osa Peninsula, Aguabuena, 3.5 km W of Rincón, along trail leading N from the house of Don Quecho, W of BOSCOSA station, Plot # 2153, tall undisturbed forest in elevated, well-drained terrain.

8°42′N, 83°31′W, 250 m, 27 July 1994 (fr), *K. Thomsen* 1066 (C not seen, CR not seen, K not seen, MO, USJ not seen).

Parathesis costaricensis, P. glendae, and P. lon-gipedicellata belong in a group of plants with terminal inflorescences, versatile anthers, and large leaves. Parathesis acostensis Morales (Morales, 1996) is included here because it is vegetatively very similar to P. longipedicellata. However, it can readily be separated from P. longipedicellata and the rest of the group based on its unusual persistent foliaceous inflorescence bracts and erect anthers. The following key may be used to separate these related species.

KEY TO PARATHESIS COSTARICENSIS, P. GLENDAE, P. LONGIPEDICELLATA, AND RELATED SPECIES

- 1b. Anthers versatile, dorsifixed 1/3-1/2 their length; foliaceous inflorescence bracts restricted to lower 1/3 of inflorescence.
  - 2a. Abaxial leaf surface with a densely appressed, fine, whitish bizonal tomentum, the costal zone with intermixed erect, rufous dendroid hairs.

    - 3b. Petals 8–9 mm long, thick and coriaceous; anthers 2.8–3.0 long, 1.2–1.8 mm wide; rachis and branchlets with usually closely appressed, tawny-brown stellate hairs; lower leaf surface not usually obviously bizonal . . . . . . .
  - 2b. Abaxial leaf surface with mostly erect, red dendroid tomentum, especially along the costa and lateral veins, usually bizonal, often inconspicuously so, the marginal zones generally glabrous, or if tomentose then of a lighter colored, appressed tomentum.

4a. Branchlet tomentum of dark brown or dark reddish chocolate-brown, erect hairs.

- 5b. Tomentum dark brown; pedicels 6– 9 mm long; calyx lobes ovate, 1.2– 1.4 mm long; filaments 2.5–3 mm long . . . *P. longipedicellata* Ricketson
- 4b. Branchlet tomentum of light tannish brown to dark brown appressed hairs, rarely with scattered erect hairs.
  6a. Corolla tube apex glabrous between

In addition to the aforementioned novelties, revision of the genus disclosed the necessity of raising *Parathesis reticulata* var. *sinuata* to specific rank, and of lectotypifying *P. amazonica*.

Parathesis sinuata (Lundell) Ricketson & Pipoly, comb. nov. Basionym: Parathesis reticulata Lundell var. sinuata Lundell, Wrightia 3: 72. 1963. TYPE: Colombia. Departamento de Magdalena: Santa Marta, on the Donamo [Don Amo] road, about 400 ft. [122 m], 8 Apr. 1899, Herbert H. Smith 1724 (holotype, NY; isotypes, F, GH, LL-TEX, MICH, MO, US).

Some confusion has occurred because the protologue differs slightly from the actual label data. A handwritten note on the NY holotype, penned in H. H. Smith's own hand states: "Occasional on the banks of streams in the forest, below 1200 ft. . . . Specimen collected on the Donamo [Don Amo] road about 400 ft. Apr. 8 [1899]." Unfortunately, duplicates were distributed with incomplete data information: while the elevation was correctly given as 400 ft., the location was given only as "Plants of Santa Marta," and the date given only as Apr. 1898–1901.

Lundell misunderstood this taxon as a variety of *P. reticulata*, but it actually belongs to a group of species with terminal inflorescences; erect anthers; tomentum of the branchlets and the undersurface of the leaves fine, mostly stellate, and usually closely appressed, often glabrescent; and ovary tomentose at least apically or along the costa. *Parathesis reticulata* possesses all of these characters except it has a glabrous ovary. *Parathesis reticulata* actually belongs to a complex containing 17 species, typified by *P. crenulata*, because of its character-

istic terminal inflorescences; erect anthers; tomentum of the branchlets and the undersurface of the leaves fine, mostly stellate, and usually closely appressed, often glabrescent; and ovary mostly glabrous. While gross morphology of the leaves and appressed-tomentose branchlets, concomitant with erect anthers, are shared between *P. sinuata* and *P. reticulata*, the villous-tomentose ovary and sinuate versus reticulate leaf margins clearly separate *P. sinuata* from *P. reticulata*.

Specimens examined. COLOMBIA. Comisaría Goajira [Departamento de La Guajira]: along stream through forest 10 km S of Carraipia, 4 July 1944, Oscar Haught 4236 (COL, GH, K, NY, UC, US); Municipio Riohacha, Corregimiento Tomarrazón, Inspección de policía La Gloria, 11°3.3′N, 73°0.3′W, 460 m, 2 Sep. 1990 (sterile), Orlando Marulanda & Julio Betancur (BRIT, HUA not seen, MO).

Parathesis amazonica Mez, Repert. Spec. Nov. Regni Veg. 16: 416. 1920. TYPE: Brazil. Acre: "Rio Acre, bei Seringal de São Francisco," Oct. 1911 (fl), E. Ule 9686 (holotype, B destroyed; lectotype, here designated G; isolectotypes, K, LL-TEX (fragment)).

The specimen at G was selected as the lectotype over the K sheet, because it more closely matches the photo (F Neg. 4872: MO, LL-TEX) of the original B sheet (destroyed during WWII) in leaf size and shape and floral maturity.

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